

**Beach Seine Catches of Juvenile Salmon
and other Fish in Masset Inlet and
Masset Sound, B.C., in 1985**

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BEACH SEINE CATCHES OF JUVENILE SALMON AND OTHER FISH IN
MASSET INLET AND MASSET SOUND, B.C., in 1985

by

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ABSTRACT

Hargreaves, N. B., B. A. Patten, and R. J. LeBrasseur. 1987. Beach seine catches of juvenile salmon and other fish in Masset Inlet and Masset Sound, B.C., in 1985. Can. Data Rep. Fish. Aquat. Sci. 632: 256 p.

This report summarizes data for all fish captured with beach seines during 1985 in Masset Inlet and Masset Sound, Queen Charlotte Islands, B.C. This sampling was conducted as part of a larger study designed to investigate the mortality of pink and chum salmon during early sea life. In 1985 beach seining was routinely conducted at 16 locations at approximately seven day intervals from 6 April to 29 June. Although the primary purpose of this sampling program was to collect juvenile pink and chum salmon, a variety of other species was caught incidentally.

RESUME

Hargreaves, N. B., B. A. Patten, and R. J. LeBrasseur. 1987. Beach seine catches of juvenile salmon and other fish in Masset Inlet and Masset Sound, B.C., in 1985. Can. Data Rep. Fish. Aquat. Sci. 632: 256 p.

Le présent rapport résume les données sur les poissons capturés en 1985 à l'aide de sennes de rivage dans l'inlet et la passe Masset, aux îles Reine-Charlotte (C.-B.). Cet échantillonnage faisait partie d'une plus importante étude sur la mortalité des saumons rose et kéta au début de leur séjour en mer. Du 6 avril au 29 juin 1985, on a couramment pêché à la senne de rivage à environ 1 semaine d'intervalle à 16 endroits. Le but principal de ce programme d'échantillonnage était la collecte de saumons rose et kéta juvéniles, mais diverses autres espèces ont fait l'objet de captures accessoires.

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INTRODUCTION

Masset Inlet is a large (ca. 220 sq. km) tidal basin located on Graham Island in the Queen Charlotte Island group. It is connected to the Pacific Ocean (Dixon Entrance) via Masset Sound, a long (ca. 38 km) and narrow (ca. 2-4 km) channel (Figure 1). Masset Inlet supports the largest runs of pink salmon in the Queen Charlotte Islands, as well as substantial stocks of other salmonid species. The Masset Inlet stocks of pink salmon are somewhat unusual in that the disparity between even and odd numbered years is very strong, with historic highs of 1 to 2 million adult pinks returning in even numbered years and no pinks returning in odd numbered years (Neave 1962). In addition, the number of pink salmon returning to Masset Inlet in even numbered years has historically undergone dramatic fluctuations from year to year, and during the period of 1970-1980 there appeared to be a significant decline in pink salmon returns. As Masset Inlet was thought to be the primary rearing area for juvenile pink salmon, there were concerns that the general decline might be the result of increases in mortality during the early sea period.

As a result of these concerns a four year study of the early sea-life of juvenile pink and chum salmon in Masset Inlet was initiated in 1982 by the Fisheries Research Branch, Department of Fisheries and Oceans. Juvenile salmon and potential predators were collected with a variety of sampling gear, including beach seines, two-boat trawl, fish traps, and purse seine. In 1982 sampling began in June and terminated in August. In subsequent years sampling was initiated in March or early April and continued until early July. This report summarizes the results for all samples of juvenile salmon and other fish captured with beach seines during 1985. Data for additional samples collected with other types of gear, and beach seine catch data for other years will be published in separate reports.

METHODS

Routine beach seining began during the first week in April and continued until the last week of June. During this period, a series of beach seine samples were collected from at least 14 locations throughout Masset Inlet and 2 locations in Masset Sound at approximately 7 day intervals. For ease of reference, each sampling location (Figure 1) was assigned a unique name (Appendix 3). The original selection of these sampling locations was dictated to a large degree by gear limitations and logistic considerations (e.g., accessibility in bad weather and at all tide levels). However, additional exploratory sampling in other locations yielded comparable fish abundances and species compositions. We therefore assume that samples collected at the 16 locations routinely sampled are representative of Masset Inlet and Masset Sound as a whole.

Two nets were employed for the routine beach seining in 1985. The first, hereafter referred to as 'fine mesh' beach seine, was 46m (150 feet) long by 3.6m (12 feet) deep with 6.4 mm (0.25 inch) stretched nylon mesh webbing. The other beach seine had the same overall dimensions but with 12.7 mm (0.5 inch) stretched nylon mesh and is hereafter referred to as the 'coarse mesh' beach seine. Both beach seines had rigid foam corks along the top edge approximately one every meter and a 12.7 mm dia. lead line along the full length of the bottom edge of the net. Nylon ropes, 10 to 15 m long and 12.7 mm diameter were attached to each end of both seines to act as "leads" into the nets and to provide purchase when pulling them through the water. The "fine mesh" seine was used during the early part of the year when the juvenile salmon were small. This seine was replaced with the "coarse mesh" seine as soon as the juvenile salmon could not pass through the meshes of the coarse seine. In use, one of these seines was piled onto the bow of a 5.5 m skiff powered with an 80 or 90 HP outboard motor. The seine was set by nosing the boat in as close as possible to the shore and then a person jumped out of the boat and took the free end of the upper "lead" rope of the seine ashore. The boat was then backed away from the beach and along the shore in a semi-circle, with the seine paying out from the bow. As the last 3 to 5 m of the seine payed out, the rear of the boat was turned sharply away from the shore to protect the outboard motor and a second person jumped out, taking the loose end of the other "lead" rope to the shore. The seine was then pulled ashore manually, taking care to purse the lead line before bringing in the cork line.

Each species of salmon in the catch was individually enumerated if the sample were not too large (less than about 100 fish per species). For large catches a sample of 50-100 was counted and the number of fish remaining was estimated by visual comparison with the sample. If there were sufficient numbers of fish caught, (ca. >20) samples were retained for further analyses by immediate preservation in 4% buffered formalin in sea-water. In some cases samples of live fish were retained by placing them in large (30 l) plastic containers filled with sea-water and aerated with a small 12 volt air compressor. After obtaining the samples all remaining fish were released and the seine piled back on the boat ready for deployment at the next location. Live samples of fish were immediately taken to the laboratory for live measurements or to net enclosures for use in predation experiments (cf. Hargreaves and LeBrasseur 1986). The preserved samples were usually accumulated aboard the boat and were taken to the laboratory at the end of the day for subsequent analyses. Typically, the samples were processed within 24 hours of their collection.

In the laboratory (aboard the Fisheries Research Branch barge 'Velella') the preserved samples were sorted by species and counted. Juvenile salmon also were examined for wounds and scars. Up to 50 fish of each species were measured (fork length for salmonids and total length for all other fish) to the nearest millimeter and weighed in grams (to 2 decimal places accuracy) using a computerized measurement system (Hargreaves unpubl).

For many samples, the stomachs of up to 10 juvenile salmon of each species and of many of the potential predators of juvenile salmon were

examined both visually and microscopically. The stomach contents data will be summarized in separate reports.

In the interest of brevity the beach seine catch data are reported in a condensed format. Examples of catch data from five separate locations are given in Appendix 1, along with an explanation of how to interpret the information. Throughout this report the names of the various fish have been abbreviated; a full list of these abbreviations is provided in Appendix 2. Appendix 3 gives a brief description of the physical characteristics and vegetation at each sampling location.

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Pages 4 through 256 do not appear in paper, but appear in microfiche form at the back of this report.